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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/124,925    07/29/98    ASHIZAWA

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EXAMINER
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DOVE, T

ART UNIT	PAPER NUMBER
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1745

DATE MAILED:

10/07/99

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IM22/1007

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

09/124,925

Applicant(s)

Ashizawa et al.

Examiner

Tracy Dove

Group Art Unit

1745



☒ Responsive to communication(s) filed on 29 Jul 1998

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-4 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-4 is/are rejected.

☒ Claim(s) 1-4 is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## DETAILED ACTION

### *Priority*

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on August 14, 1997. It is noted, however, that applicant has not filed a certified copy of the Japanese application (9-235387) as required by 35 U.S.C. 119(b).

### *Specification*

The disclosure is objected to because of the following informalities: on page 15, line 11 the specification states "When coating each both sides of these" which is confusing language. Examiner suggests "When coating both sides of each of these" instead. Also on page 15, line 14 the specification reads "active material was much as compared" which is unclear. Replacing "much" with "greater" is suggested.

Appropriate correction is required.

### *Claim Objections*

Claim 1 is objected to because of the following informalities: in lines 5 and 8-10, brackets and parentheses are used which are not permitted in claim language. Appropriate correction is required. Also in lines 6 and 7 "... (1)" and "... (2)" are not permitted.

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✓ Claims 2 is objected to because of the following informalities: in line 12 the word "the" should be inserted after "wherein". Appropriate correction is required.

✓ Claims 3 and 4 are objected to because of the following informalities: the preamble of each claim states "A method for producing a current collector for use in a secondary battery according to claim 1". It is suggested that applicant amend each claim to read "A method for producing the current collector of claim 1 for use in a secondary battery". Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

\* Claim 1 defines M as the periphery length of the penetrated hole and N as the periphery length of a virtual circle having the area S of the penetrated hole. This limitation is confusing and it is unclear what applicant is attempting to claim. Examiner suggests that additional figures may further clarify the invention as claimed.

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The term "large" in claim 1 (line 3) and claim 3 (line 17) is a relative term which renders the claim indefinite. The term "large" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear what "a large number of penetrated holes" or "a large number of convex parts" encompasses.

The term "complicated" in claim 1, line 4, is a relative term which renders the claim indefinite. The term "complicated" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Complicated generally means difficult and it is unclear what a complicated or difficult shape encompasses.

Claims 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: it is unclear how a concavo-convex roll converts the metal foil without holes into a metal foil with penetrated holes. Concavo-convex rolls generally pleat or corrugate the metal foil, but do not punch holes into the foil. They can create indentations into the foil, but how the penetrated holes are formed in Applicant's invention as claimed is unclear. Specifically, the claims do not state how the metal foil without holes is converted into a metal foil with penetrated holes. Additionally, it is unclear how the penetrated holes conform to the equation (2) of claim 1.

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*changed to  
"given"*

\* { The term "certain pressure" in claims 3 and 4 is a relative term which renders the claim indefinite. The term "certain pressure" is not defined by the claims, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear what "certain pressure" encompasses. ✓

✓ Claim 4 recites the limitation "after converting the portions of a metal foil without hole into penetrated holes" in lines 22-24. There is insufficient antecedent basis for this limitation in the claim. It appears that this claim should depend from claim 3 instead of claim 1. Appropriate correction is required.

✓ To the best that the claims are understood in review of the above claim objections and USC 112 rejections, note the prior art rejections below.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Yanagihara et al. 5,543,250.

Yanagihara et al. teaches a metal sheet having a plurality of punched holes. The punched holes have burrs along their peripheries to improve the engagement between the metal sheet and

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the coated layer of active material. The metal sheet has a plurality of punched holes with punching burrs on at least one face of the metal sheet and along the periphery of each punched hole. The metal sheet is perforated to produce holes while the metal adjacent to the holes is bent out of the original plane of the sheet to form burrs, providing each hole with a ragged edge extending away from a respective face of the sheet. The metal sheet may have thickness  $t$  of from 25-100  $\mu\text{m}$ . Alternatively, the metal sheet is cut or sheared by means of the edges of the punches of the male mold and the edges of the recesses of the female mold. The holes thus punched are formed with very few burrs, if any, along the peripheries of the metal sheets. See col. 4, lines 60-64. The shape of the holes may be rectangular, circular or similar polygons.

Thus the claims are anticipated.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagihara et al. 5,543,250, as applied to claim 1 above, in view of Doundoulakis 5,626,989.

Yanagihara et al. does not explicitly state that the metal foil passes between a concavo-convex roll and a smoothing roll where burrs are removed.

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However, Doundoulakis teaches a battery cell having pleated negative and positive plates. The pleated plates may be solid foil plates having perforations spatially positioned therethrough. Each plate is fabricated from a solid lead sheet and may vary in thickness between 1.5 and 7.5 mm. The apparatus for pleating the plates from roll sheets which may be solid or perforated includes a pair of meshed pinion gears (concave/convex) that alter the foil surface from a flat surface to a corrugated type surface. To perforate the sheet punching station 54 is positioned between the roll 21 and the pinion gears 23 and 24. Numerous punching techniques may be utilized to achieve the desired perforations and their spacing. Burrs may be formed during the punching.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was to use the method of Doundoulakis for producing the current collectors of Yanagihara because they are from the same field of endeavor. Doundoulakis is making metal sheets for electrodes similar to the metal sheets of Yanagihara. Therefore one of skill would know that the method of Doundoulakis could be used for producing other, similar current collectors. Additionally since Yanagihara states that the current collectors may or may not have burrs, one of skill would have known that a metal smoothing roll would have been used to make the current collectors without burrs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is (703) 308-8821. My supervisor M.



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Nuzzolillo can be reached at (703) 308-3776. The Art Unit receptionist can be reached at (703) 308-0661 and the official fax number is (703) 305-3599.

September 30, 1999

**Maria Nuzzolillo**  
**Supervisory Patent Examiner**  
**Technology Center 1700**

A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke extending to the right.